

Closure Plan for Building 123
Components of
RCRA Unit 40

U. S. Department of Energy
Rocky Flats Environmental Technology Site

DRAFT
Final Rev. 1

August 1997

ADMIN RECORD

B123-A-000122

**CLOSURE PLAN FOR BUILDING 123
COMPONENTS OF RCRA UNIT 40**

REVISION 0

AUGUST 1997

This Closure Plan has been reviewed and approved by:

Doug Steffen, Project Manager

Date

Ted Hopkins, Environment Compliance

Date

This Waste Management Plan was prepared by:

Richard T. Jensen, Senior Engineer, RMRS

Date

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1.0 INTRODUCTION

Partial closure of RCRA Unit 40 includes the closure of the RCRA regulated process waste lines, sumps, and pumping stations associated with Building 123 at the Rocky Flats Environmental Technology Site (RFETS). This system includes process waste lines currently used in the building, as well as one active underground line. The Building 123 area encompasses overlapping Individual Hazardous Substance Sites (IHSSs) 121 and 148. IHSS 121 includes the underground Original Process Waste Lines (OPWLs) P-1, P-2, and P-3. Leakage from old process waste lines and possible spills from operations may have resulted in contaminated soil beneath and adjacent to Building 123. This potentially contaminated soil has been designated IHSS 148. The OPWL is a network of tank and underground pipelines constructed to transport and temporarily store process waste from point of origin to on-site treatment and discharge points. Both the active and inactive systems include underground lines which transfer the process waste to valve vaults or holding tanks. All process waste lines inside the building are currently active. Closure will include deactivation, dismantlement, and remediation of all system components in Building 123, and the active underground pipeline that leaves the building and extends to Valve Vault 18.

Partial closure of RCRA Unit 40 is part of a larger project to decontaminate and decommission (D&D) Building 123 and surrounding area. This project will remove Buildings 123, 123S, 113, and 114 at RFETS, will eliminate Individual Hazardous Substance Site 148 and will close a portion of RCRA Unit 40. The Building 123 slab and foundation will be removed as required to remediate contamination beneath the building as dictated by soil sampling results. The overall project is being conducted as an accelerated action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) approved under the Building 123 Proposed Action Memorandum (PAM). The PAM is a decision document for the D&D of Building 123 and has been approved by the Colorado Department of Public Health and Environment (CDPHE). The 123 PAM references this unit closure plan. RCRA Unit 40 currently has Interim status, and as a result, the partial closure activities fall under Colorado Hazardous Waste Regulations: Part 265, Subpart G -Closure and Post Closure.

1.1 APPLICABILITY

This RCRA Closure Plan applies to both the above ground and below ground Process Waste Tank System found in or below Building 123. This Closure Plan will identify the options available for the management, and the removal and/or remediation of this system. This Closure Plan does not apply to the inactive portion of the P-1 Pipeline, to Pipelines P-2, or P-3 nor to any soil contamination found under this building.

The active pipeline shown in Figure 1-1 which runs from the building to Valve Vault 18 was the active part of RCRA Unit 40 associated with Building 123. Part of P-1 was incorporated into the new system. The pipelines, P-2 and P-3, under Building 123 were abandoned in 1982. Building Operations prior to 1985 were not regulated under RCRA, and, therefore, these pipelines are not part of RCRA Unit 40. As such they are not included with this closure plan. Building 123 PAM addresses the investigation and potential remediation of P-2 and P-3 and any soil contamination that may be discovered.

2.0 FACILITY CONTACT



The RFETS contact for closure activities is:

Manager, Rocky Flats Field Office
U. S. Department of Energy
P. O. Box 928
Golden, Colorado 80402-0928

Phone: (303) 966-2025

3.0 UNIT CLOSURE NOTIFICATION, CERTIFICATION AND SCHEDULE

The closure of the building's process waste system, sumps, and underground pipelines will be conducted as a partial closure of Unit 40. Notification to the Director of the intent to close the process waste system will be submitted to the Colorado Department of Public Health and Environment (CDPHE) 45 days prior to the planned start of closure activities. Preliminary work as described in Section 7.0 will already have been completed.

If the total time necessary for closure will exceed 180 days, the facility will notify the Director within 30 days of knowing that closure will take longer than 180 days (Part 265.113(b)) and at least 30 days prior to the expiration of the 180 day closure period (Part 265.113(c)).

Within 60 days after completion of closure activities, the facility will notify CDPHE through submittal of proper certification that the unit has been closed in accordance with the approved closure plan. The certification package will be signed by the owner or operator and by an independent, Colorado-registered professional engineer.

4.0 REGULATORY REQUIREMENTS

A plan for closure of RCRA hazardous waste treatment and storage units at RFETS is required pursuant to 6 CCR 1007-3, Part 265 of the Colorado Hazardous Waste Regulations: Part 265, Subpart G - Closure and Post Closure, Sections 265.110 through 265.120. No demonstration of financial responsibility is required because compliance with 6 CCR 1007-3, Part 266, Subpart A - Financial Requirements, is not required for government owned facilities.

5.0 UNIT DESCRIPTION

RCRA Unit 40

RCRA Unit 40 is the site-wide network of tanks, pipelines, and sumps constructed to transport and temporarily store process waste from point of origin to on-site treatment and discharge points. Operation of the process waste system in Building 123 began in 1952 in the east and central wings. The west wing was added in 1968. The process piping in the building was replaced in 1989, and has been in use through the shutdown of the building in 1997. Sections of Unit 40 covered by this plan include all process waste system components in Building 123, and one active underground line. Three other underground lines designated as P-1, P-2, and P-3 exist under Building 123. A diagram of the building and the associated underground process waste lines are shown in Figure 1-1.

The process waste system incorporated into RCRA Unit 40 includes the system components in Rooms 103A, 103, 105, 111, 112, 113B, 123A, 123, 124, 125, 126, 126C, 127, 155, 155B, 156, 157, and 158 in the building, and the active underground line that connects to Valve Vault 18. The underground line is shown in Figure 1-1 as the "Active Process Waste Line".

In 1989, the process waste transfer system was upgraded, including the removal of an east-west section of P-1 between MH-2 and MH-3. The north-south section of P-1 between Building 123 and MH-1 was converted to the new process system. Three large, interconnected concrete sump pit areas were installed in Rooms 156, 157, and 158. Piping was installed connecting MH-1 to Valve Vault 18. A drawing of Building 123 can be found in Appendix A. The drawing shows the locations of overhead and underground lines.

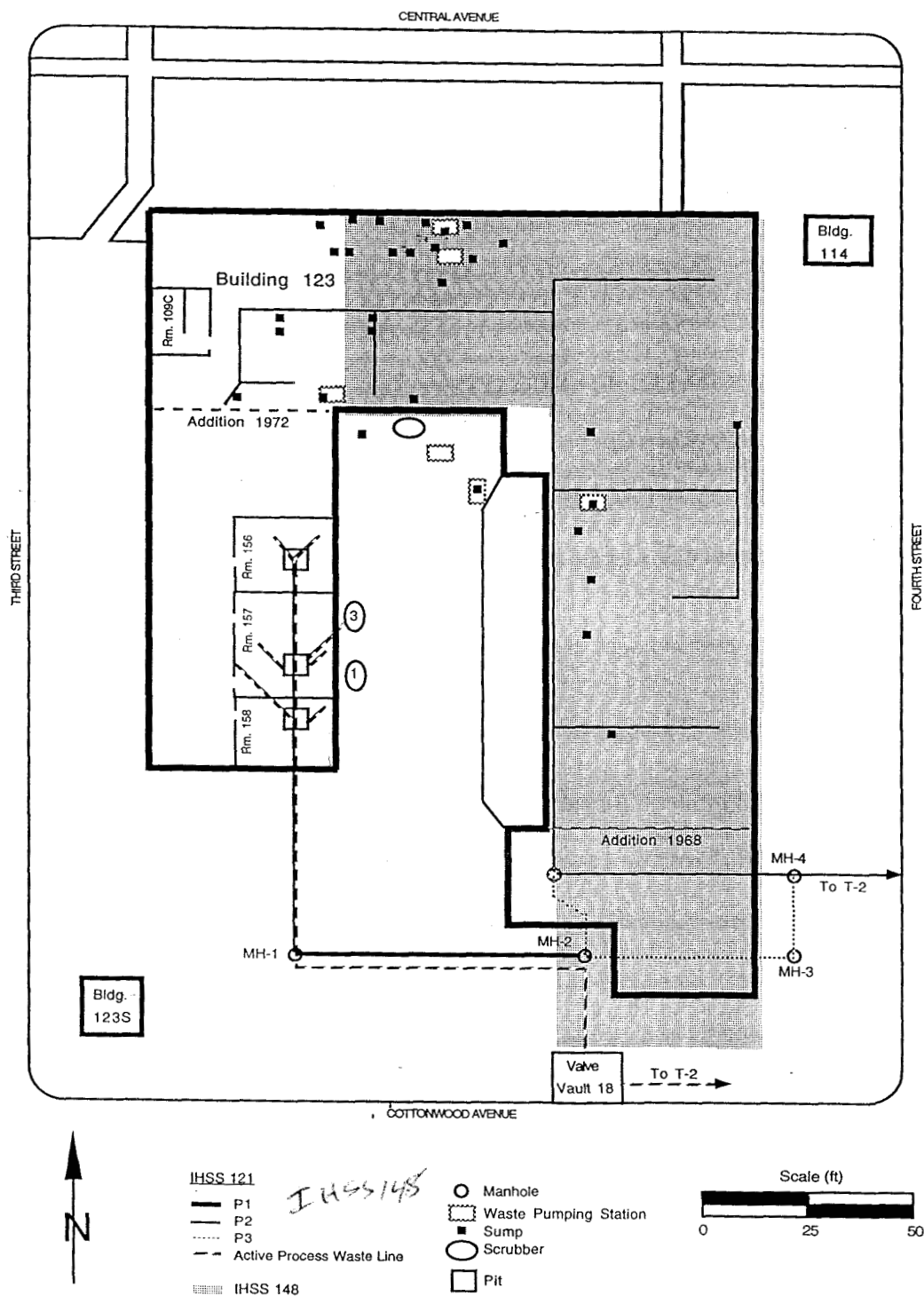


Figure 1-1 Location of Building 123 And Associated IHSSs 121 And 148

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6.0 CHARACTERIZATION

6.1 PROCESS WASTE LINE CHARACTERIZATION

6.1.1 Above Ground Portion of RCRA Unit 40 in Building 123

In 1989 the majority of the above ground portion of the waste process system was replaced. At that time, administrative controls were established that prohibited the disposal of listed hazardous waste to the waste process system. In addition, satellite accumulation areas were established to manage all listed hazardous wastes that were generated in Building 123. Beginning in 1989, that portion of RCRA Unit 40 within Building 123 was used predominately as an elementary neutralization unit for D002 corrosive waste streams. However, organic compounds such as DDCP and toluene were used in very small quantities for Americium separation. These wastes were disposed to the waste process line. The WSRIC system does not identify any of these waste streams as being either RCRA listed or characteristic. *residue*
Identified
Chemical

The WSRIC identifies the following process wastes as being disposed of in the process waste system:

Acids: nitric acid, hydrofluoric acid, sulfuric acid, hydrochloric acid, acetic acid, formic acid, oxalic acid, and perchloric acid;

Bases: ammonium hydroxide and sodium hydroxide;

Radionuclides: various isotopes of plutonium, americium, uranium, and curium;

Metals: Calcium, Magnesium, and Iron effluents, beryllium (trace amounts); and

Others: ammonium nitrate, ammonium thiocyanate, ammonium chloride, ammonium oxalate, ammonium hydroxylamine, ethylene glycol, DDCP, DTPA, potassium permanganate, potassium permanganate, sodium nitrate, sodium carbonate and toluene.

Based upon process knowledge, materials from this unit (pipelines, pumps, sumps, etc.) must be handled as low level radioactive waste. As a result, if any components of this unit are determined to be both RCRA hazardous and low level radioactively contaminated, these materials will be managed as RCRA Mixed Waste.

6.2 SOIL CHARACTERIZATION

under the A complete characterization of the soil in the Building 123 area will be done as part of the activities Building 123 Proposed Action Memorandum. Soil characterization will include sampling and analysis of the soil beneath and surrounding Building 123. Following removal of the building superstructure, samples will be collected through the slab to determine the necessity for soil remediation. A sampling and analysis plan (SAP) has been written to guide characterization activities in these areas. The SAP incorporates a review of existing records to establish the location of potentially contaminated areas and to define sampling protocol. The RFETS

Statistical Applications Group will be used to ensure that statistically valid and representative samples of each waste stream are taken. Current planning indicates a need for approximately fifty (50) soil samples beneath the slab of Building 123 and from areas surrounding underground, abandoned OPWLs. Samples will be collected at depths immediately below the pipe to locate any contamination that may have leaked from the lines. Samples will be analyzed for Volatile Organic Compounds (VOCs), Target Analyte List (TAL) Metals, radionuclides, and nitrates. Data quality requirements supporting the analysis effort will conform to criteria established in "Guidance for the Data Quality Objective Process", EPA QA/G-4 (EPA 1994). The Data Quality Objectives are listed in the Soil Sampling Analysis Plan to characterize IHSS 127 and 148 in Building 123. (See RF/RMRS-97-023)

7.0 PRELIMINARY WORK ON ABOVE GROUND PORTION OF RCRA UNIT 40

The above ground portions of the RCRA Unit 40 will be removed prior to approval of the RCRA Closure Plan. The piping will be visually inspected, to determine if residuals and/or scaling remain in the pipe.

All solid waste that is generated (i.e., PVC and steel piping, sumps, etc.) will be considered "newly generated wastes". These waste streams will be characterized in accordance with 6 CCR 1007.3, Section 262.11 using either process knowledge and/or analytical data.

- Provided that the piping is free of residue and/or scale, characterization of the above ground portion of the unit indicates that the pipe is a non-hazardous low level waste. Non-hazardous low level waste will be landfilled in accordance with Rocky Flats DOE procedures or recycled if economically viable.
- Piping containing residues and/or scale will be characterized using approved laboratory procedures which meet the requirements of SW-846. Data quality requirements are cited the "Guidance for the Data Quality Objective Process", EPA QA/G-4 (EPA 1994). Piping that contains residue or scale will be tested for semi-volatile organic compounds, volatile organic compounds, and Target Analyte List (TAL) metals. Hazardous waste and mixed hazardous waste will be packaged and transported to on-site TSDFs awaiting final disposal at an approved off-site TSDF.
- As a pollution prevention consideration, no decontamination of the above ground portions of this unit will occur prior to removal. This will eliminate treatment rinsates as a generated waste stream.

8.0 CLOSURE PERFORMANCE STANDARD

The closure performance standard specifies that hazardous waste facilities are to be closed in such a way as to (1) minimize the need for further maintenance at the facility, and (2) protect human health and the environment by controlling, minimizing, or eliminating potential releases of hazardous waste to the environment (6 CCR 1007-3, Section 265.111).

That portion of RCRA Unit 40 within or below Building 123 will be removed and/or capped.

To achieve closure of this unit, one of two options will be selected. A final selection will be made by DOE/Kaiser-Hill based on characterization data. Based on the analytical data on hand, the below ground portions of this unit would be closed as detailed in Section 8.1, below.

8.1 OPTION 1: DECONTAMINATION OF BELOW GROUND PORTIONS OF RCRA UNIT 40 ASSOCIATED WITH BUILDING 123

The below ground portion of this unit will be decontaminated in accordance with the Rocky Flats Environmental Technology Site RCRA Permit, Part 10 Closure, including Section C, Clean Closure by Decontamination.

Requirements identified in this section include, but are not limited to, the selection of an appropriate solution for decontamination. Selection of this solution was based on the types of wastes previously managed in the unit and the contaminants that are present. Water with sodium carbonate and trisodium phosphate will be used as the decontamination solution. The system will be flushed with the decontamination solution to remove any remaining trace amounts of acids or bases. The system will be final rinsed with 500 gallons of decontamination solution and tested to determine if the rinsate meets the standards.

This interim status unit will be considered decontaminated:

- Upon removal of all visible waste residuals and;
- When the final rinsate contains concentration of priority pollutants (identified as being managed in the unit) and heavy metals (268.48 UHC listing) concentrations are below the Tier 2 standards found in Attachment 5 of RFCA and;
- The pH of the rinsate will be between 6 and 9.

8.1.1 IF RINSATE FAILS TO MEET PERFORMANCE STANDARDS

If the rinsate is above the Tier 2, Attachment 5 standards, the lines will be removed and characterized in accordance with 6 CCR 1007.3, Section 262.11. The final Hazardous and/or mixed wastes will be stored on-site in approved TSDFs waiting for final disposal in an authorized off-site TSDF. Low level wastes will be landfilled in accordance with DOE procedures.

8.1.2 IF RINSATE MEETS PERFORMANCE STANDARDS

Once the rinsate solution meets the performance standards, as identified above, the soil sampling program approved in the 123 PAM will be initiated. If the soil contamination is above Section 261 Subpart C levels, the pipeline will be removed as part of the soil remediation program. If the soil contamination is below Section 261 Subpart C levels the lines will be grouted and capped in place. Any remaining soil contaminants will be evaluated as part of the 123 PAM and/or final ROD for the facility.

8.2 OPTION 2: MANAGED AS HAZARDOUS WASTE WITH NO ON-SITE TREATMENT

Hazardous and/or mixed waste generated from this project may be stored on-site in TSDFs until shipment to an off-site TSDF for final disposition. All hazardous waste and/or mixed wastes generated from this project will be managed in accordance with all applicable state and federal regulations.

9.0 SPECIFIC CLOSURE ACTIVITIES

Closure activities will be performed to achieve the objectives of the closure performance standard. The activities will be conducted in conjunction with decontamination and decommissioning activities covered by the PAM for Building 123, which includes remediation of the remainder of the building and abandoned OPWLs under the building. Closure activities will be implemented to emphasize the protection of human health and the environment, as well as waste minimization.

The following sections outline the procedures necessary to close active process waste lines in Building 123, and the active underground line between Building 123 and Valve Vault 18.

9.1 PREPARATION OF ENGINEERING PACKAGES AND WORK PACKAGES

Engineering and work packages will be used to govern the deactivation and decommissioning activities. Engineering designs will be developed for removal and decommissioning activities. The engineering package will describe the sequence of activities and methods of size reducing, dismantling, and packaging of the building materials. The packages are being prepared for the Building 123 project in three phases:

- 1) Deactivation of the building,
- 2) Demolition of the building,
- 3) Remediation of underground contamination and/or closure of the underground pipeline as required.

The RCRA Unit 40 system located in the building as described in an earlier section will be covered by the Deactivation and Demolition packages. Remediation and stabilization will be accomplished by the remediation and closure package.

9.2 HEALTH AND SAFETY

The RFETS Health and Safety Practices Manual defines general health and safety measures to be followed at the Site. All closure activities will be conducted in accordance with the manual. In addition, a specific Health and Safety Plan has been written for Building 123 D&D activities, which specifically addresses D&D and RCRA Unit 40 closure activities. As Low As Reasonably Achievable (ALARA) principles will be followed regarding personnel radiation dosage and exposures to hazardous materials. Radiation Control Technicians will survey all rooms in the building for radiation, and the pipelines and sumps will be monitored for radiological

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contamination.

In accordance with Site procedure 1-74000-IWCP, September 4, 1996, Integrated Work Control Program (IWCP) work packages will be prepared to direct and control all work. The packages will be organized similarly to the engineering packages. Each work package will contain a Job Safety Analysis (JSA), which addresses all health and safety issues in detail.

9.3 TANK SYSTEM CLOSURE ACTIVITIES

9.3.1 Closure of System Components

Preliminary work consisting of removing and characterizing the above ground portion of the piping system will commence as soon as the building is evacuated. Closure of the underground lines is dependent upon the amount of contamination (if any) discovered in the final characterization. Either the below ground pipeline will meet the rinsate standards (Option 1) or the pipeline will be removed, characterized and managed in accordance with all applicable rules and regulations (Option 2).

The WSRIC system documents that the process waste system in Building 123 has only been used as an elementary neutralization unit. The majority of the liquids that were discarded were acids and bases. According to the WSRIC data, no listed wastes were disposed of in this system since 1989 when the above ground portions of this unit were replaced.

Closure of this system will be done as follows:

- Preliminary Work. The above ground portion will be removed and characterized as a preliminary step. All solid and hazardous waste will be managed in accordance with all applicable state and federal rules and regulations. Hazardous waste will be stored on-site in authorized TSDFs awaiting final disposition.
- Below ground portions of this unit will be decontaminated using a solution of water and sodium carbonate and trisodium phosphate. The rinsate will be tested to determine if it meets the Tier 2 levels identified in Attachment 5 of RFCA. If the rinsate meets these standards the below ground portion of this unit will be considered closed. If the rinsate is above the standards, the pipe will be excavated and characterized. Characterization will determine if the pipeline is managed as hazardous/mixed waste or low level waste. If soil contamination is present that requires removal/remediation, the pipeline will be removed at that time as part of the soil remediation.

9.3.2 Closure Options Associated with Soil Contamination

The choice of closure activities for underground pipelines will be influenced by the extent of hazardous contamination, found in soil sampled near the pipeline. One or more sets of activities will be pursued, based upon the amount of RCRA regulated contaminants that are found:

Contamination above RCRA levels, Subpart C, 261 levels

Underground pipelines and the soil around the pipelines contaminated above RCRA, Subpart C, 261 levels will require thorough decontamination, including removal of the contaminated soil and pipeline. Soil contaminated above RCRA regulated levels will be removed and managed as hazardous waste.

If sampling shows an extensive contamination plume in the soil, other management options such as soil vapor extraction, thermal drying, or on site stabilization may be pursued upon agreement with CDPHE personnel. If any these options are necessary, an addendum to this closure plan will be submitted.


Contamination below RFCA levels, below Tier 2 levels

If analytical results show soil to be free of hazardous contamination below RFCA, Tier 2 levels, the following actions will be taken. Underground pipelines will be filled with grout, capped and left in place.

Contamination below RCRA Subpart C, 261 levels, and above RFCA Tier 2

If analytical results show soil contamination to be below RCRA, Subpart C, 261 levels, but the RFCA, Tier 2 levels, the following actions will be taken. Underground lines will be filled with grout, capped, and left in place. Soil be left undisturbed. As part of the RFCA Plant Closure, a risk assessment will be conducted. Remediation, if required, will then be conducted on the pipelines and soil in accordance with a CDPHE approved RFCA Decision Document.

above



10.0 DISPOSITION OF WASTE GENERATED DURING CLOSURE

Remediation and closure activities may generate a combination of radioactive, hazardous, and mixed wastes. Contaminated soil and pipeline material are expected to be the major sources of waste. Wastes consisting of plastic, tools, personal protective equipment and other materials associated with demolition and remediation will also be a major source of waste. Contaminated waste will be handled by qualified waste packaging technicians who will work with decontamination specialists and radiation control technicians to identify and segregate the Hazardous or Low Level waste. Waste packaging technicians will package and label the waste, and will arrange for radioactive waste to be certified by the Kaiser-Hill Waste Certification group. Liquid hazardous or radioactive waste generated after the process waste lines are no longer in service will be collected in drums and shipped to Building 374 for processing. Solid waste in drums or boxes will be managed by the Waste Disposal group in an appropriate storage area prior to off site shipment.

10.1 ESTIMATE OF WASTE VOLUMES TO BE GENERATED

Table 10-1 describes the types, estimated quantities of waste to be generated, and how the waste will be handled and disposed.

Waste Type	Waste Forms	Disposition of Waste	Estimated Quantity
Industrial,	Process waste pipelines	Industrial waste will be recycled or packaged and shipped to the USA landfill in Erie, Colorado	100 Cubic Ft.
Low Level or Low Level Mixed Hazardous	Plastic, paper, from decontamination or LLW handling	<p>LLW or Hazardous is:</p> <ul style="list-style-type: none"> - Handled by onsite trained workers - Prepared for low level packaging or DOT hazardous drums - LLW requires certification by K-H Waste Certification - Packaged by qualified RFETS technicians - Delivered to RMRS Waste Operations for storage prior to future offsite disposal <p>LLW will be sent to Nevada Test Site for disposal</p> <p>Mixed Waste will be stored on-site in TSDF awaiting shipment to off-site TSDFs</p>	400-500 Cubic Ft.

Hazardous or Low Level Mixed	Soil from remediation underground pipelines plastic, paper, tools, etc. from remediation activities	<ul style="list-style-type: none">- Handled by radiation trained workers- Prepared for Low Level Drums or boxes- Requires certification by K-H Waste Certification- Packaged by qualified RFETS technicians- Delivered to RMRS Waste Operations for storage prior to future offsite disposal <p>LLW will be sent to Nevada Test Site for disposal</p> <p>Mixed Waste will be stored on-site in TSDF awaiting shipment to off-site TSDFs</p>	Up to 2100 Cubic Ft. (Waste will be generated only if contamination indicates need to exhume pipeline.)
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11.0 RECORD KEEPING

The following closure documentation will be maintained:

- Date, number, and type of sampling activities
- Analytical results
- Records of actions taken to decontaminate equipment or structures
- Work control packages developed to govern closure activities
- Certification and other documentation that closure was conducted in accordance with the closure plan

Appendix A

First Floor Plan